209220'80E28001

FIG. 1A

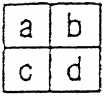


FIG. 1B

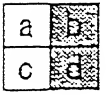


FIG. 1C

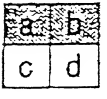


FIG. 1D

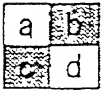
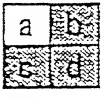


FIG. 1E



20220-80328001

FIG. 2A

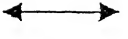


FIG. 2B

FIG. 2C

FIG. 3

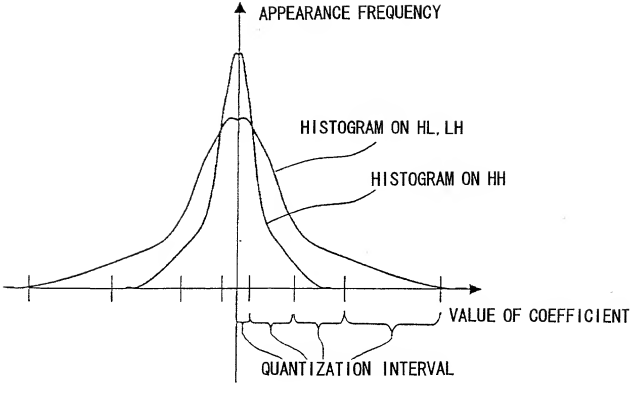
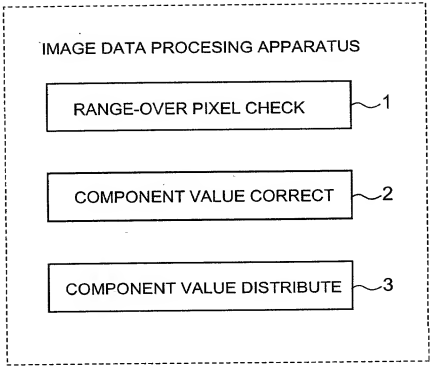
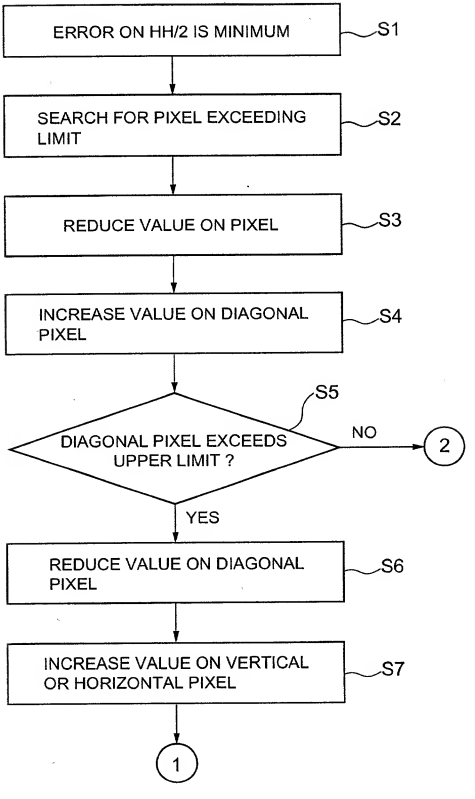

APPEARANCE FREQUENCY
HISTOGRAM ON HL, LH
HISTOGRAM ON HH
VALUE OF COEFFICIENT
QUANTIZATION INTERVAL

FIG.4



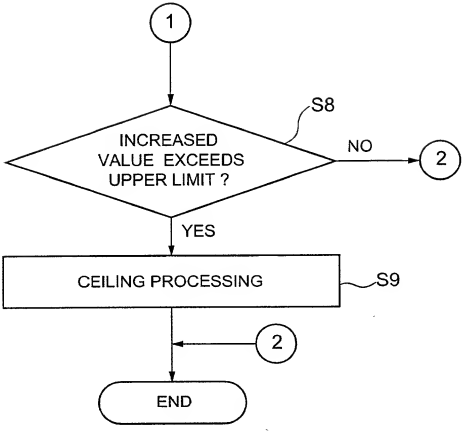
20220'80C26001

FIG.5A



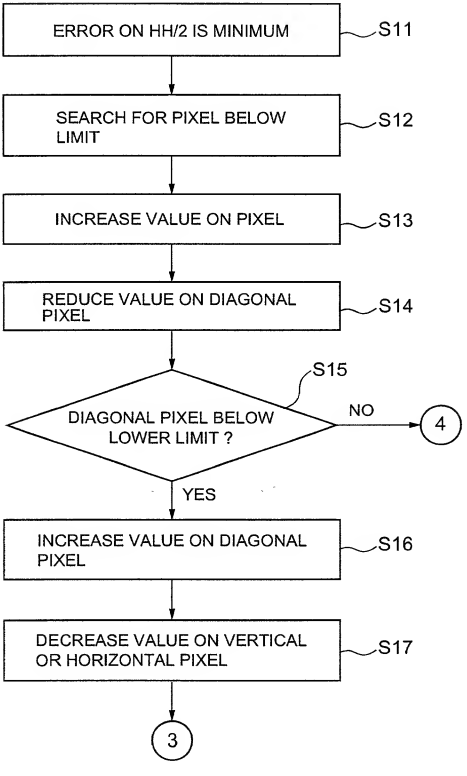
20220802280901

FIG.5B



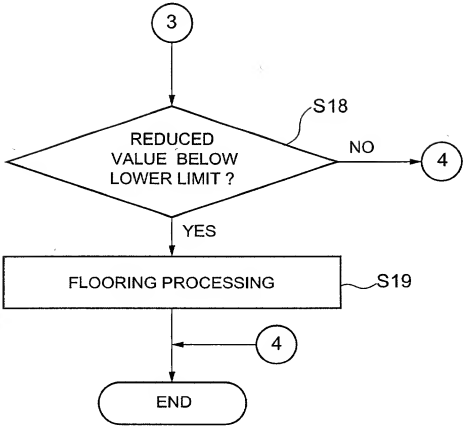
20220.60228001

FIG.6A



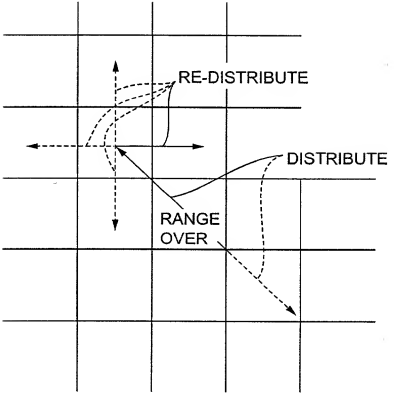
20220308228001

FIG.6B



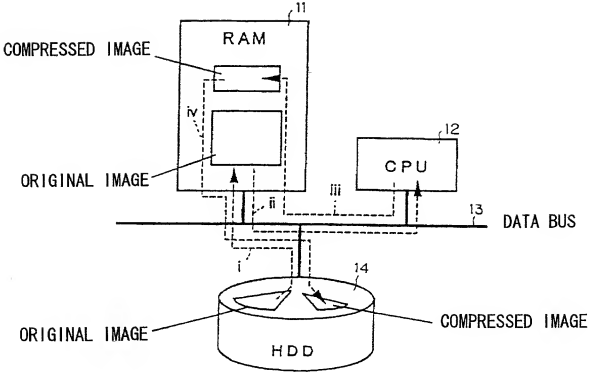
209220-80228001

FIG.7



2052210-802280T

FIG. 8


11
RAM
COMPRESSED IMAGE
iv
ORIGINAL IMAGE
12
CPU
iii
ii
13
DATA BUS
i
14
ORIGINAL IMAGE
COMPRESSED IMAGE
HDD

2092220 · 80E280DT

FIG. 9

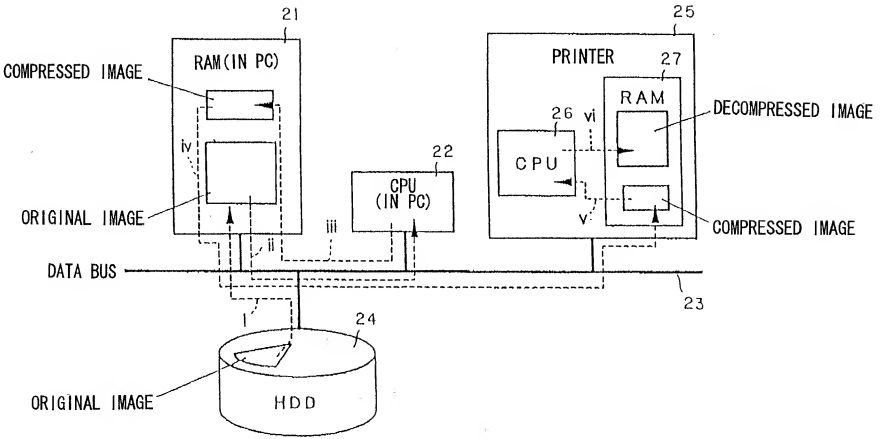
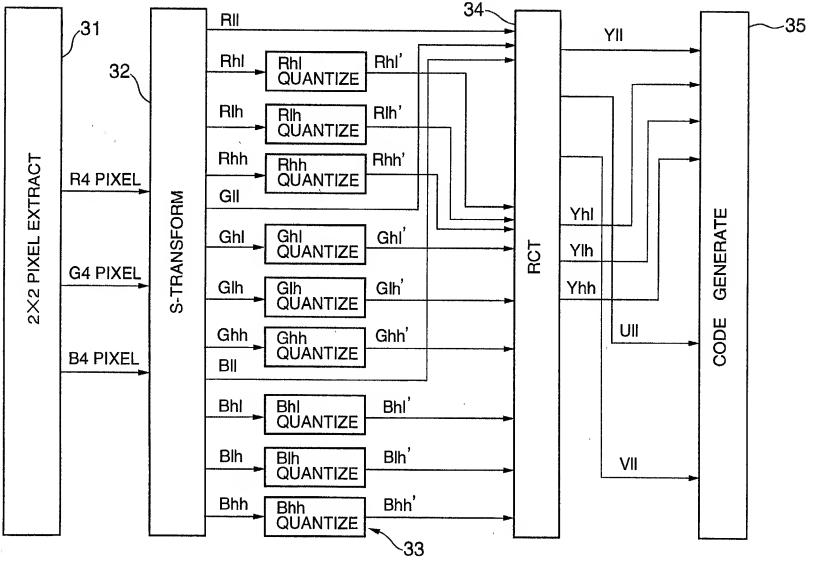
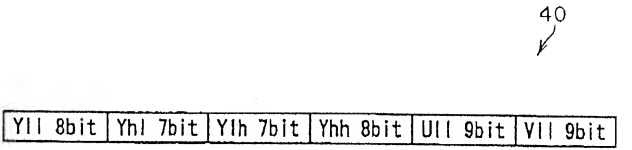


FIG.10


2X2 PIXEL EXTRACT
31
32
R4 PIXEL
G4 PIXEL
B4 PIXEL
S-TRANSFORM
RII
RHI
RHI QUANTIZE
RHI'
RIH
RIH QUANTIZE
RIH'
RHH
RHH QUANTIZE
RHH'
GII
GHI
GHI QUANTIZE
GHI'
GIH
GIH QUANTIZE
GIH'
GHH
GHH QUANTIZE
GHH'
BII
BHI
BHI QUANTIZE
BHI'
BIH
BIH QUANTIZE
BIH'
BHH
BHH QUANTIZE
BHH'
33
34
RCT
YII
YHI
YIH
YHH
UII
VII
35
CODE GENERATE

2092220 '80E28001

FIG. 11



20220-802280U1

FIG.12

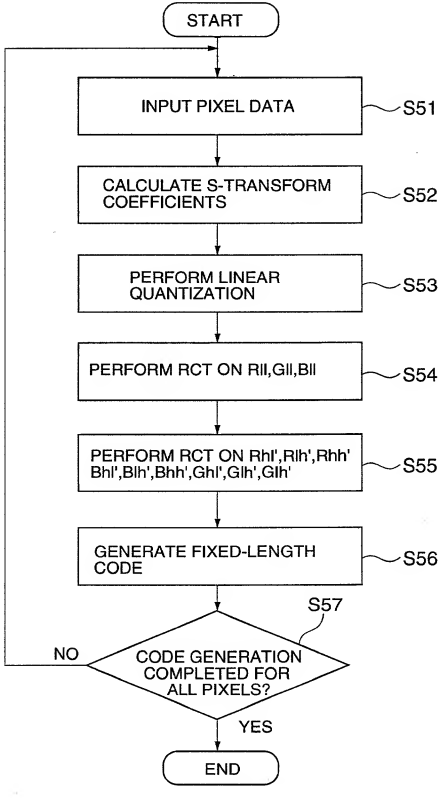


FIG.13

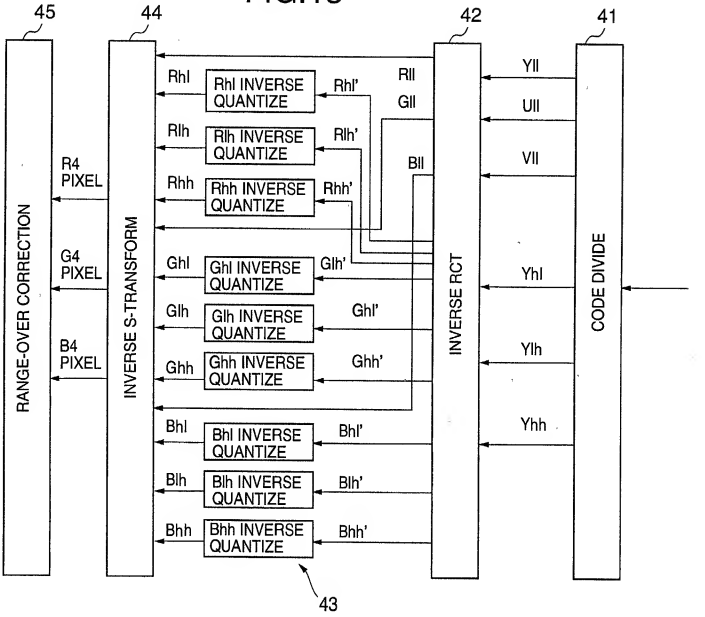

45
44
42
41
RANGE-OVER CORRECTION
INVERSE S-TRANSFORM
INVERSE RCT
CODE DIVIDE
R4 PIXEL
G4 PIXEL
B4 PIXEL
Rhl
Rlh
Rhh
Ghl
Glh
Ghh
Bhl
Blh
Bhh
Rhl INVERSE QUANTIZE
Rlh INVERSE QUANTIZE
Rhh INVERSE QUANTIZE
Ghl INVERSE QUANTIZE
Glh INVERSE QUANTIZE
Ghh INVERSE QUANTIZE
Bhl INVERSE QUANTIZE
Blh INVERSE QUANTIZE
Bhh INVERSE QUANTIZE
Rhl'
Rlh'
Rhh'
Ghl'
Glh'
Ghh'
Bhl'
Blh'
Bhh'
Rll
Gll
Bll
Yll
Ull
Vll
Yhl
Ylh
Yhh
43

FIG.14

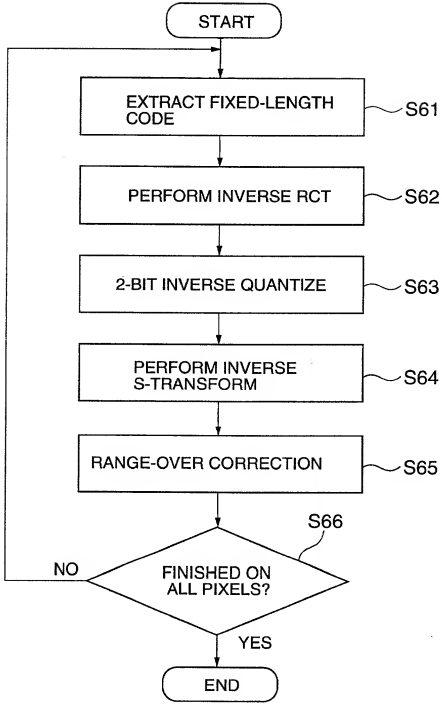
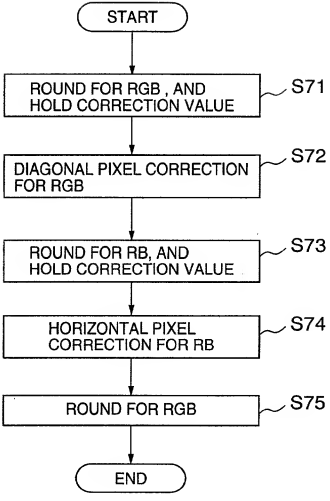
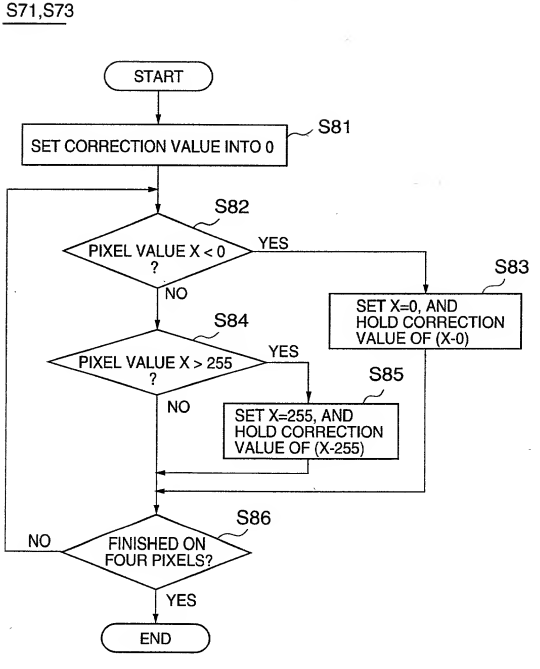

START
EXTRACT FIXED-LENGTH CODE
S61
PERFORM INVERSE RCT
S62
2-BIT INVERSE QUANTIZE
S63
PERFORM INVERSE S-TRANSFORM
S64
RANGE-OVER CORRECTION
S65
S66
FINISHED ON ALL PIXELS?
NO
YES
END

FIG.15



20220'80E28001

FIG.16


S71,S73
START
SET CORRECTION VALUE INTO 0
S81
S82
PIXEL VALUE X < 0 ?
YES
NO
S83
SET X=0, AND HOLD CORRECTION VALUE OF (X-0)
S84
PIXEL VALUE X > 255 ?
YES
NO
S85
SET X=255, AND HOLD CORRECTION VALUE OF (X-255)
S86
NO
FINISHED ON FOUR PIXELS?
YES
END

20220-8028001

FIG.17

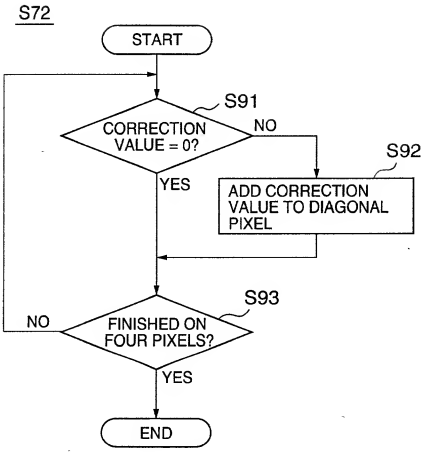
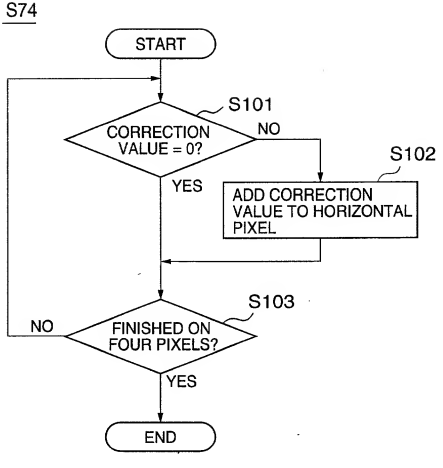


FIG.18



209220*80230001

20520-8022B01

FIG.19

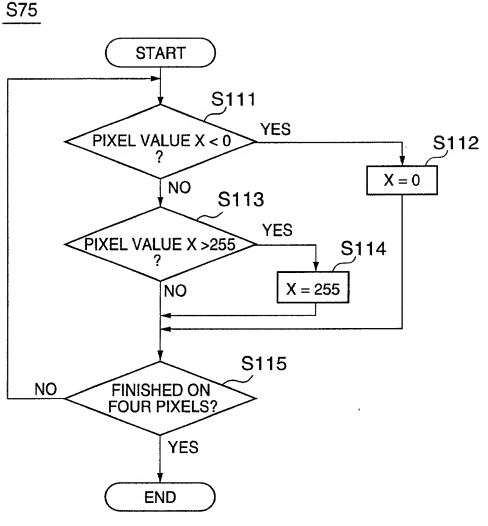
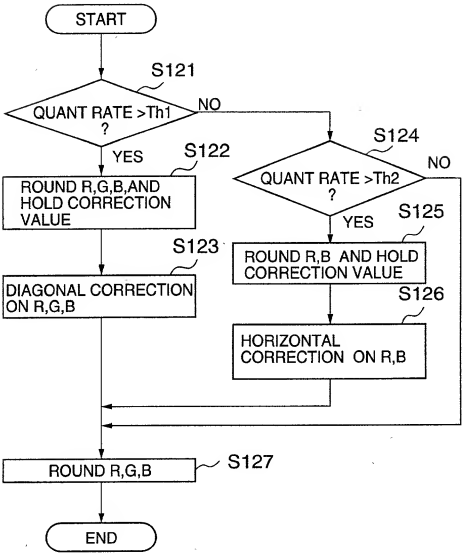


FIG.20



20220-0023801

209220 '80C28001

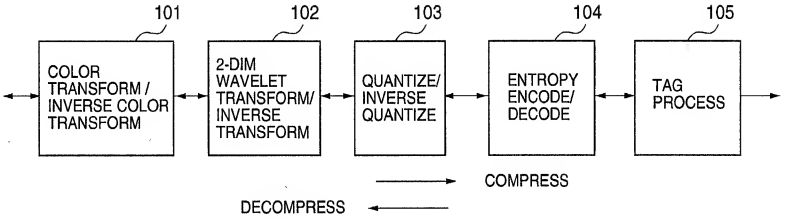
FIG. 21

50

HEADER 2 bit	Yll 8bit	Yhl 7bit	Ylh 7bit	Yhh 8bit	Ull 9bit	Vll 9bit

2052220 * 80E28001

FIG.22



2092201-80228001

FIG. 23

20220208038001

FIG. 24A

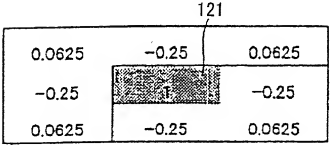
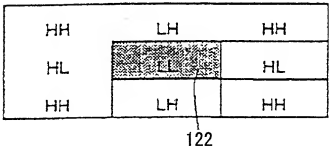


FIG. 24B



20220-0032801

FIG. 25A

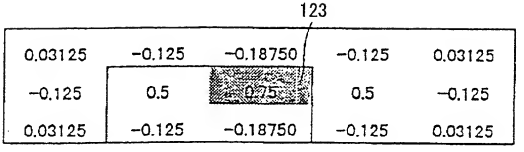
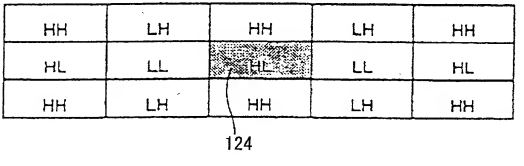


FIG. 25B



2095220-80228001

FIG. 26A

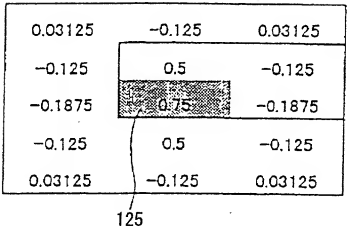
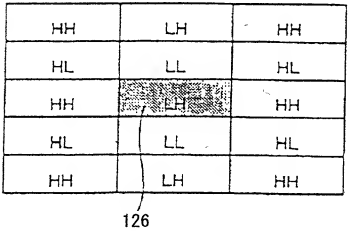


FIG. 26B



20220-8028001

FIG. 27A

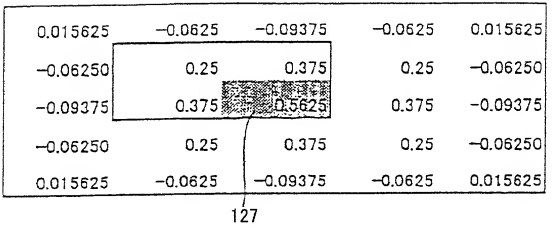


FIG. 27B

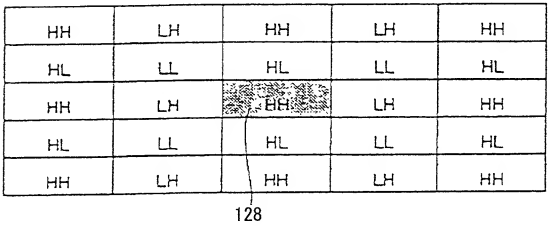


FIG. 28A

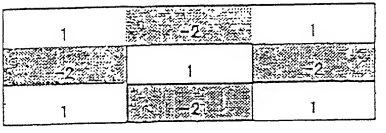
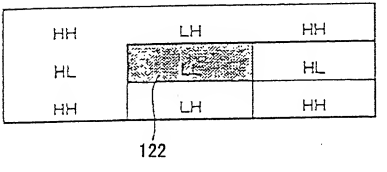


FIG. 28B



20220-302280U1

FIG. 29A

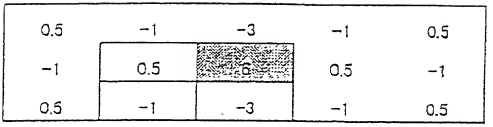
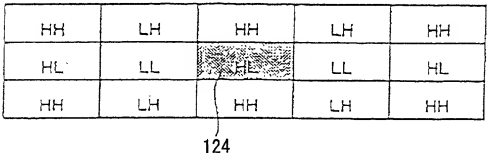


FIG. 29B



2052208.80228001

20220.80328001

FIG. 30A

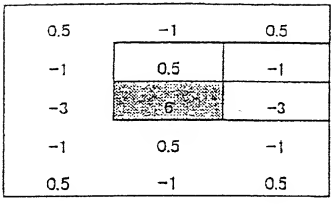


FIG. 30B

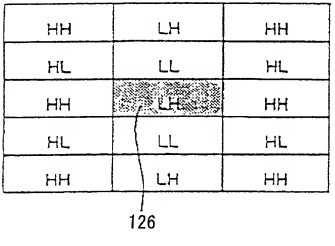


FIG. 31A

0.3	−0.5	−1.5	−0.5	0.3
−0.5	0.3	3.0	0.3	−0.5
−1.5	3.0	9.0	3.0	−1.5
−0.5	0.3	3.0	0.3	−0.5
0.3	−0.5	−1.5	−0.5	0.3

FIG. 31B

HH	LH	HH	LH	HH
HL	LL	HL	LL	HL
HH	LH	HH	LH	HH
HL	LL	HL	LL	HL
HH	LH	HH	LH	HH

128

20220803280001

20220-802801

FIG.32

RANGE-OVER PIXEL	PIXEL TO BEAR RANGE-OVER
LL POSITION	HL OR LH POSITION
HL POSITION	LL ,AND THEN,LH POSITION
LH POSITION	LL ,AND THEN,HL POSITION
HH POSITION	HL OR LH POSITION

FIG.33

	LL POSITION	HL POSITION	LH POSITION	HH POSITION
CONTRIBUTION TO LL POSITION	1.00	−0.25	−0.25	0.06
CONTRIBUTION TO HL POSITION	0.50	0.75	−0.13	−0.19
CONTRIBUTION TO LH POSITION	0.50	−0.13	0.75	−0.19
CONTRIBUTION TO HH POSITION	0.25	0.38	0.38	0.56

20220*80220001

FIG. 34

131

0.0003	-0.0010	-0.0045	0.0188	-0.0045	-0.0010	0.0003
-0.0010	0.0033	0.0154	-0.0642	0.0154	0.0033	-0.0010
-0.0045	0.0154	0.0712	-0.2976	0.0712	0.0154	-0.0045
0.0188	-0.0642	-0.2976	[illegible]	-0.2976	-0.0642	0.0188
-0.0045	0.0154	0.0712	-0.2976	0.0712	0.0154	-0.0045
-0.0010	0.0033	0.0154	-0.0642	0.0154	0.0033	-0.0010
0.0003	-0.0010	-0.0045	0.0188	-0.0045	-0.0010	0.0003

FIG. 35

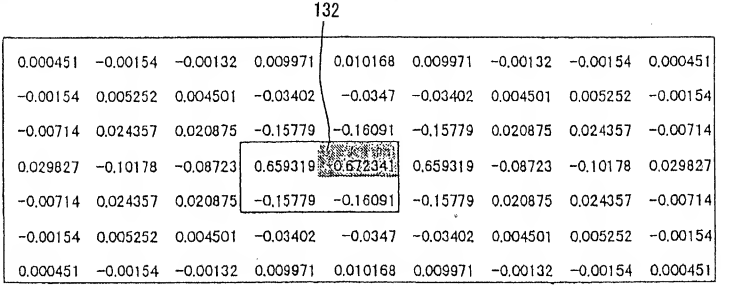

132
0.000451 -0.00154 -0.00132 0.009971 0.010168 0.009971 -0.00132 -0.00154 0.000451
-0.00154 0.005252 0.004501 -0.03402 -0.0347 -0.03402 0.004501 0.005252 -0.00154
-0.00714 0.024357 0.020875 -0.15779 -0.16091 -0.15779 0.020875 0.024357 -0.00714
0.029827 -0.10178 -0.08723 0.659319 0.672341 0.659319 -0.08723 -0.10178 0.029827
-0.00714 0.024357 0.020875 -0.15779 -0.16091 -0.15779 0.020875 0.024357 -0.00714
-0.00154 0.005252 0.004501 -0.03402 -0.0347 -0.03402 0.004501 0.005252 -0.00154
0.000451 -0.00154 -0.00132 0.009971 0.010168 0.009971 -0.00132 -0.00154 0.000451

FIG. 36

0.000451	-0.00154	-0.00714	0.029827	-0.00714	-0.00154	0.000451
-0.00154	0.005252	0.024357	-0.10178	0.024357	0.005252	-0.00154
-0.00132	0.004501	0.020875	-0.08723	0.020875	0.004501	-0.00132
0.009971	-0.03402	-0.15779	0.659319	-0.15779	-0.03402	0.009971
0.010168	-0.0347	-0.16091	10.672341	-0.16091	-0.0347	0.010168
0.009971	-0.03402	-0.15779	0.659319	-0.15779	-0.03402	0.009971
-0.00132	0.004501	0.020875	-0.08723	0.020875	0.004501	-0.00132
-0.00154	0.005252	0.024357	-0.10178	0.024357	0.005252	-0.00154
0.000451	-0.00154	-0.00714	0.029827	-0.00714	-0.00154	0.000451

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FIG. 37

0.000715	-0.00244	-0.00209	0.015816	0.016128	0.015816	-0.00209	-0.00244	0.000715
-0.00244	0.008331	0.00714	-0.05397	-0.05503	-0.05397	0.00714	0.008331	-0.00244
-0.00209	0.00714	0.006119	-0.04625	-0.04716	-0.04625	0.006119	0.00714	-0.00209
0.015816	-0.05397	-0.04625	0.349602	0.356507	0.349602	-0.04625	-0.05397	0.015816
0.016128	-0.05503	-0.0472	0.356507	0.363548	0.356507	-0.0472	-0.05503	0.016128
0.015816	-0.05397	-0.04625	0.349602	0.356507	0.349602	-0.04625	-0.05397	0.015816
-0.00209	0.00714	0.006119	-0.04625	-0.04716	-0.04625	0.006119	0.00714	-0.00209
-0.00244	0.008331	0.00714	-0.05397	-0.05503	-0.05397	0.00714	0.008331	-0.00244
0.000715	-0.00244	-0.00209	0.015816	0.016128	0.015816	-0.00209	-0.00244	0.000715

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FIG.38

	LL POSITION	HL POSITION	LH POSITION	HH POSITION
CONTRIBUTION TO LL POSITION	1.24	−2.38	−2.38	1.14
CONTRIBUTION TO HL POSITION	0.66	5.38	−1.26	−2.57
CONTRIBUTION TO LH POSITION	0.66	−1.26	5.38	−2.57
CONTRIBUTION TO HH POSITION	0.35	2.85	2.85	5.82

FIG.39

	LL POSITION	HL POSITION	LH POSITION	HH POSITION
CONTRIBUTION TO LL POSITION	1.24	−0.30	−0.30	0.07
CONTRIBUTION TO HL POSITION	0.66	0.67	−0.15	−0.16
CONTRIBUTION TO LH POSITION	0.66	−0.16	0.67	−2.57
CONTRIBUTION TO HH POSITION	0.35	0.36	0.36	0.36

FIG.40

RANGE-OVER PIXEL	PIXEL TO FIRST BEAR RANGE-OVER	PIXEL TO SECOND BEAR RANGE-OVER
LL POSITION	TO HL POSITION(HORIZONTAL)	TO LH POSITION(VERTICAL)
HL POSITION	TO LL POSITION(HORIZONTAL)	TO LH POSITION(DIAGONAL FROM HL)
LH POSITION	TO LL POSITION(VERTICAL)	TO LH POSITION(FOR SIMPLIFICATION)
HH POSITION	TO LH POSITION(HORIZONTAL)	TO LH POSITION(VERTICAL)

2092208.8023001

FIG. 41A

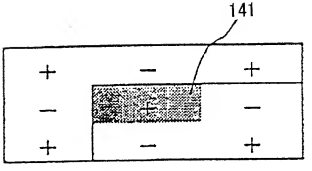
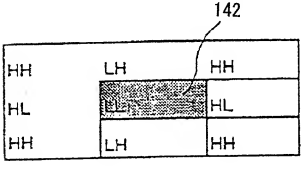


FIG. 41B



20220408228001

FIG. 42A

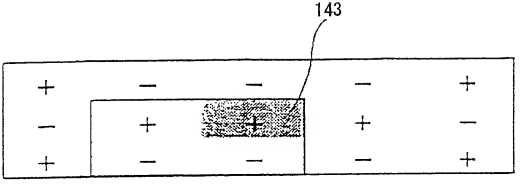
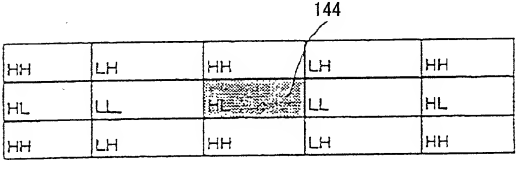


FIG. 42B



2002220-8032801

2052201.80228001

FIG. 43A

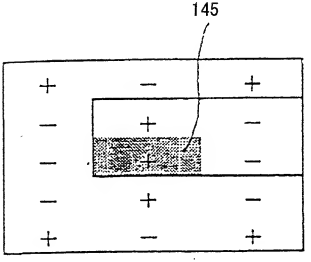


FIG. 43B

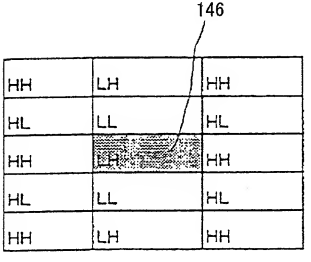


FIG. 44A

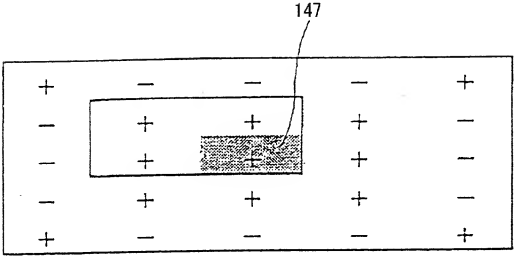
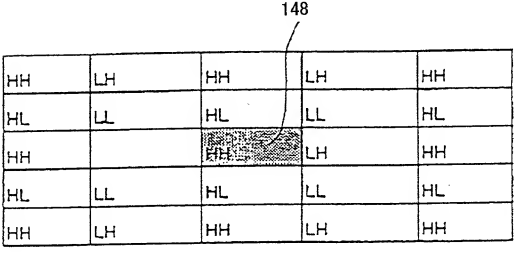


FIG. 44B



20220'80228001

FIG.45

	LL POSITION	HL POSITION	LH POSITION	HH POSITION
CONTRIBUTION TO LL POSITION	+	−	−	+
CONTRIBUTION TO HL POSITION	+	+	−	−
CONTRIBUTION TO LH POSITION	+	−	+	−
CONTRIBUTION TO HH POSITION	+	+	+	+

2092220-0022001

FIG.46

RANGE-OVER PIXEL	FIRST DISTRIBUTION PLACE	SECOND DISTRIBUTION PLACE
LL POSITION	HH(DIAGONAL)	LH(VERTICAL)
HL POSITION	LH(DIAGONAL)	HH(VERTICAL)
LH POSITION	HL(DIAGONAL)	LL(VERTICAL)
HH POSITION	LL(DIAGONAL)	HL(VERTICAL)

FIG.47

RANGE-OVER PIXEL	FIRST DISTRIBUTION PLACE	SECOND DISTRIBUTION PLACE
LL POSITION	HH(DIAGONAL)	HL(HORIZONTAL)
HL POSITION	LH(DIAGONAL)	LL(HORIZONTAL)
LH POSITION	HL(DIAGONAL)	HH(HORIZONTAL)
HH POSITION	LL(DIAGONAL)	LH(HORIZONTAL)

FIG.48

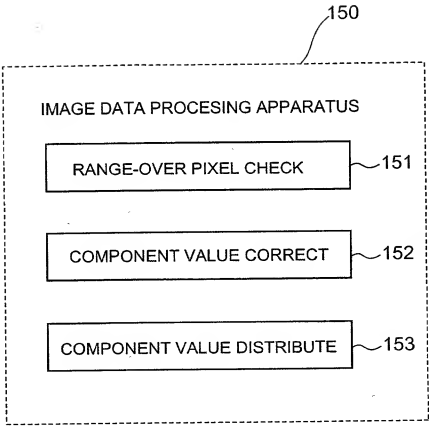
RANGE-OVER PIXEL	FIRST DISTRIBUTION PLACE	SECOND DISTRIBUTION PLACE
LL POSITION	LH(VERTICAL)	HL(HORIZONTAL)OR HH(DIAGONAL)
HL POSITION	HH(VERTICAL)	LL(HORIZONTAL)OR LH(DIAGONAL)
LH POSITION	LL(VERTICAL)	HH(HORIZONTAL)OR HL(DIAGONAL)
HH POSITION	HL(VERTICAL)	LH(HORIZONTAL)OR LL(DIAGONAL)

10082308.022502

FIG.49

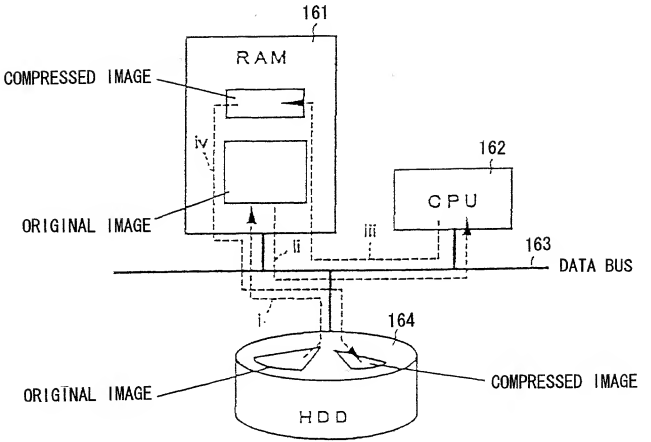
RANGE-OVER PIXEL	FIRST DISTRIBUTION PLACE	SECOND DISTRIBUTION PLACE
LL POSITION	HL(HORIZONTAL)	LH(VERTICAL)OR HH(DIAGONAL)
HL POSITION	LL(HORIZONTAL)	HH(VERTICAL)OR LH(DIAGONAL)
LH POSITION	HH(HORIZONTAL)	LL(VERTICAL)OR HL(DIAGONAL)
HH POSITION	LH(HORIZONTAL)	HL(VERTICAL)OR LL(DIAGONAL)

FIG.50



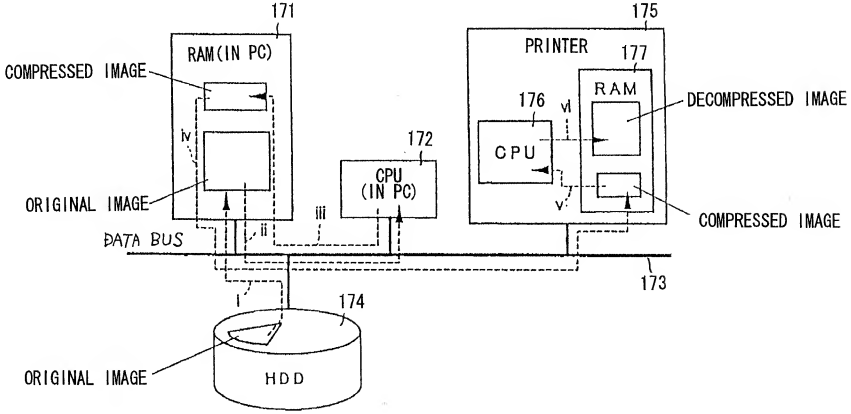
20050210.80230001

FIG. 51



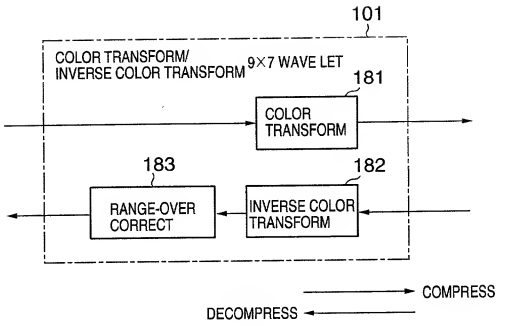
2052201-8032801

FIG. 52


171
RAM(IN PC)
COMPRESSED IMAGE
ORIGINAL IMAGE
iv
ii
iii
172
CPU
(IN PC)
DATA BUS
i
174
HDD
ORIGINAL IMAGE
175
PRINTER
177
RAM
176
CPU
vi
v
DECOMPRESSED IMAGE
COMPRESSED IMAGE
173

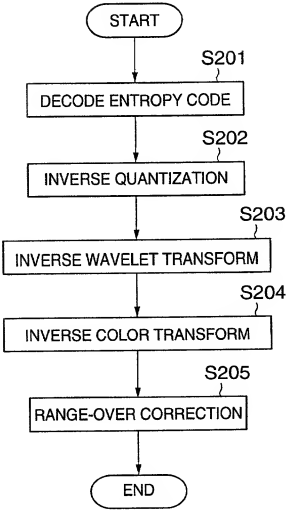
20020210-80C2801

FIG.53



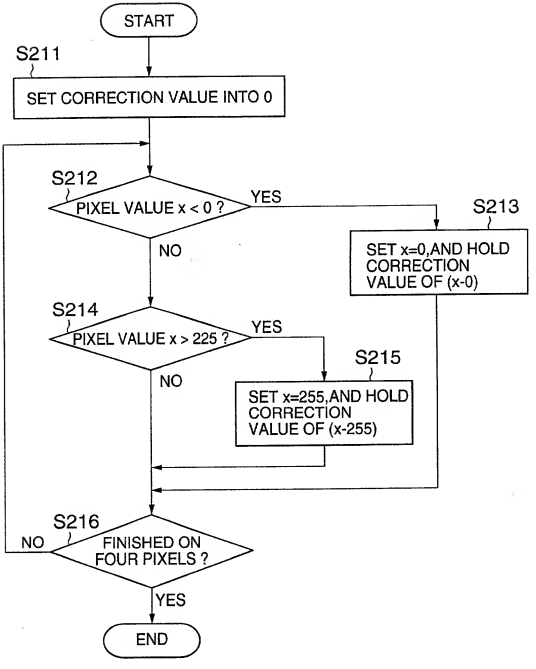
20220-8022801

FIG.54



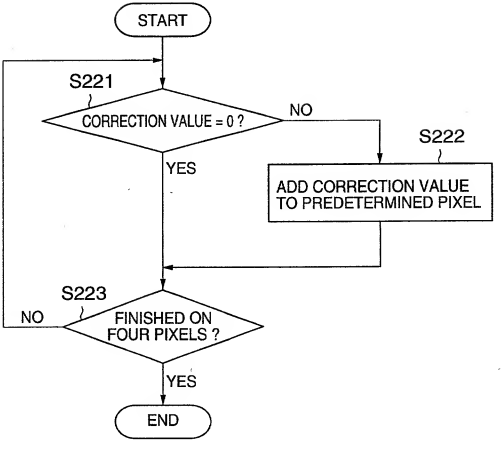
20220-802280P

FIG.55



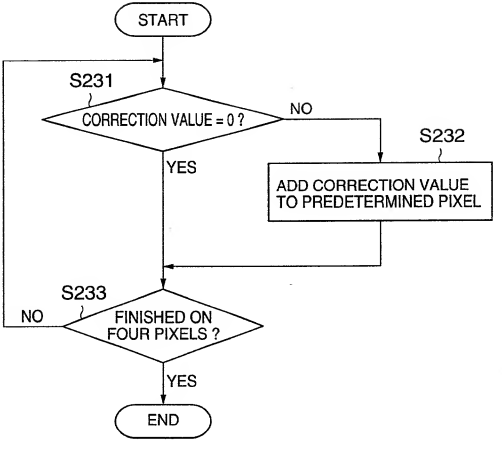
20220-80228001

FIG.56



20220-8012801

FIG.57



20220-80328101

FIG.58

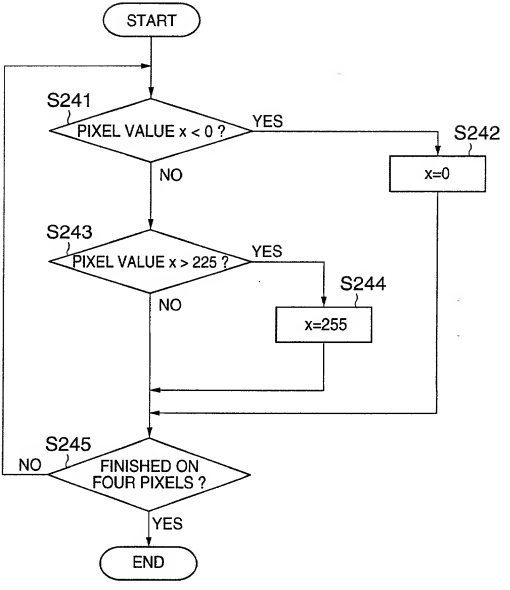
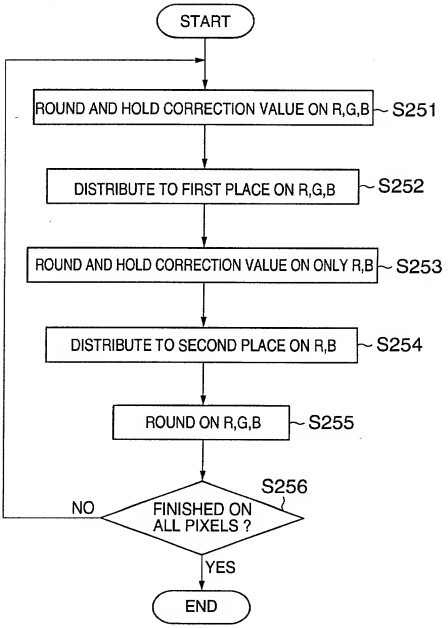


FIG.59



20220-803801

20020-802800T

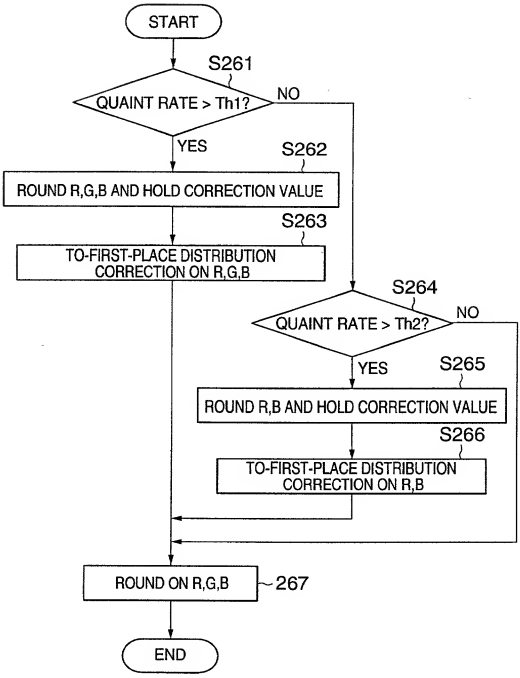



FIG.60